

```

00970 J=336:RESTORE 270
00980 READ K
00990 IF K=-1 THEN 1010
01000 POKE J,K:J=J+1:GOTO 980
01010 LPRINT CHR(27);"A";CHR(8)
01020 FOR K=0 TO 15
01030 FOR U=0 TO 8 STEP 8
01040 A48=KEY$
01050 IF A48=" " THEN 1070
01060 IF A48="S" THEN 320
01070 LPRINT CHR(27);"K";CHR(0);CHR(27);
01080 FOR J=0 TO 63: C=USR(336,61440+U*16*PEEK(61440+K*64+J))
01090 NEXT J
01100 LPRINT CHR(10)
01110 NEXT U
01120 NEXT K
01130 LPRINT CHR(27);"2";CHR(7)
01140 GOTO 330
01150 CURS1,1:PRINT"
01160 CURS 1,1:INPUT"ENTER X VALUE *X
01170 IF X>510 THEN 1160
01180 CURS 1,2:PRINT"
01190 CURS 1,2:INPUT"ENTER Y VALUE *Y
01200 IF Y>220 THEN 1190
01210 GOTO 330
    
```

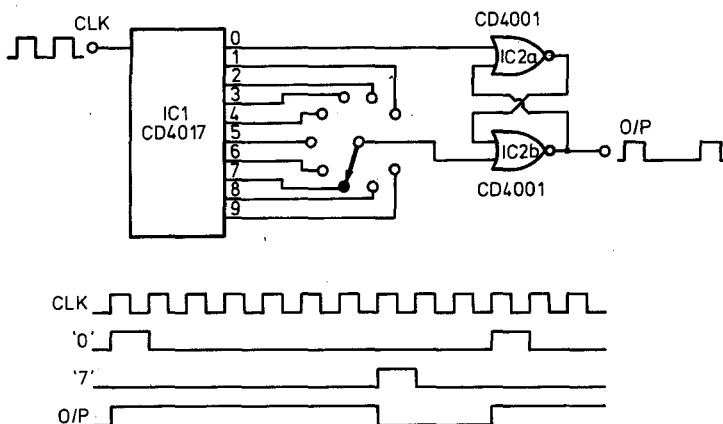
## Keyboard draw

This program is the result of my need for a simple drawing program with easy to remember commands and the ability to save and load screens. When loading screens any key will go to the next screen in the file and

the letter "A" will let you add to the screen displayed at that moment.

C. Seligman,  
Essendon,  
VIC.

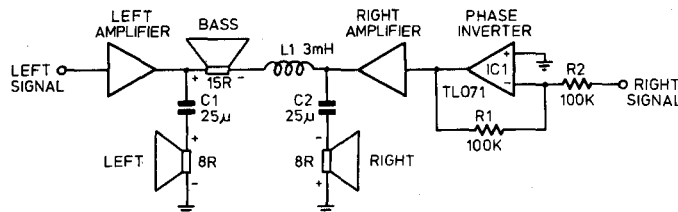
## Circuits



## Variable mark-to-space generator

This circuit produces a square wave output with a variable mark-to-space ratio selected by means of a rotary switch. The ratio can be adjusted between 9:1 and 1:9 in nine precise steps. The O output of the 4017 decade counter is used to reset the NOR gate latch. One of the

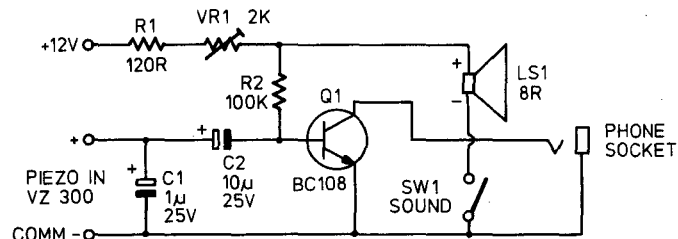
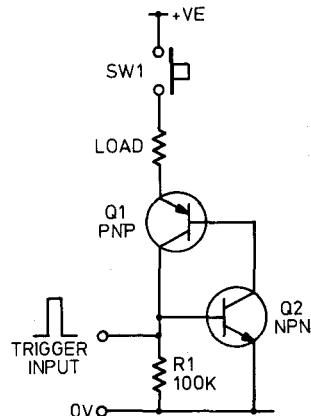
remaining nine outputs then sets the latch after the selected period. With the number 7 output selected as shown, the latch is reset after seven clock pulses have been received at the clock input, giving a mark:space ratio of 7:3.



## Two transistor latch

This circuit operates in a similar way to an SCR. When the trigger input is held high Q2 is turned on and, in turn, this turns on Q1. The collector current of Q1 provides the base current of Q2, developing a voltage drop of 0.7 V across R1.

When the trigger voltage is removed the transistors will remain on because of this base current. The only way to reset the circuit is by removing the supply momentarily by means of the RESET pushbutton switch.



## Better VZ amp

Anyone who tried to build the VZ published in the May 1988 edition of this magazine may have had a few problems with it. Here are some modifications.

Shorting out the speaker is not very healthy for the computer as it either causes the computer to crash or the program to go haywire. The remedy is to put the switch inline with the speaker.

The volume is not very loud so I reduced the 1K2 resistor to 120R. The volume control acted more like a tone control so I reconnected it (see circuit

diagram).

An on/off switch is not needed if you take the positive power supply from the internal switch.

I didn't use a 6.5mm plug and socket to connect up the amp and computer, mainly because I had a 3.5mm plug and socket but also I didn't want to remove the monitor socket, so I put the socket on the top left hand side of the computer near the vent.

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Quirindi,  
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## Super woofer

This circuit enables a single centrally placed woofer to be added to a stereo system. This gives a cost effective bass enhancer which still preserves the stereo picture via the original speakers.

The right channel is driven in antiphase and the right hand speaker is reverse connected to restore the phase.

C1 and C2 as shown give a crossover at about 800Hz -

other values could be tried.

The single bass speaker is bridge connected across the antiphase outputs via inductor L1. This has the incidental advantage of cancelling out in-phase hum and vertical turntable rumble.

Note that for a system playing records only, the inverting IC circuit could be removed by reversing one half of the stereo cartridge.